

**22@ and the Innovation District
in Barcelona and Montreal :
a process of clustering development between
urban regeneration and economic
competitiveness**

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Research note no 2011-3A

**Canada Research Chair on the
Socio-Organizational Challenges of the Knowledge
Economy**

**Télé-université/Université du Québec à Montréal
June 2011**

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Introduction

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Introduction

The primary purpose of this paper is to clarify the governance strategy of the 22@ *District* in Barcelona in order to assess the factors that could support the economic development process of Montreal's future *Innovation District* (ID). Through a comparative analysis, we examine the case of the 22@ *District* as a former industrial neighbourhood seen as a "model" of urban regeneration and economic revitalization. This study on territorial and socio-economic development is based on the assumption that the world's major cities are going through a phase of urbanization based on the re-organization of central urban areas. This dynamic can be explained by the polarization of advanced economic activities in the city's core following the emergence of new sectors of the post-fordist economy (Benko and Lipietz, 1992; Porter, 1998; Benko, 2003). This research evaluates the main factors of urban regeneration in the 22@ - *district of innovation* and it intends to identify best practices in terms of governance which can be constructive for the "*Quartier de l'Innovation*".

The first part of the analysis highlights the role of decision makers concerning the process of governance of 22@ and its historic changes. The second part focuses on the socio-

economic actors and territorial factors that could support the level of integration and implementation of Montreal@ID. In fact, the secondary purpose of this paper is to highlight the importance of the *integration process* based on socio-territorial innovations characterizing the Catalan context of 22@ as well as the *Innovation District*. Consequently, observing the 22@, some pertinent questions should be formulated in regards with the integration process which appears to be based on two key assets. On the one hand, the first one should be the spatial integration which supports the concentration of firms and institutions in terms of closer geographical proximity. On the other hand, the second one is the relational and institutional integration that fosters and enhances the partnerships and exchanges between Universities/R&D and firms. Therefore our analysis intends to verify whether the integration process in the 22@ has been implemented with the two key assets mentioned above (spatial and institutional/relational) or not. This study follows a twofold perspective.

The first one highlights the role of local actors (public and private) in increasing the economic clustering process regarding the levels of proximity and the nature of integration. The second one aims at supporting a system of cultural values, codes, reflections, and rules among local stakeholders which are fundamental in developing *common spaces of governance* and *shared strategies of development*. To summarize, this study aims at evaluating if the 22@ - *Innovation District* – can represent a development model of reference based on a *multi-clustering pole* for the Innovation District (ID), polarized around the Multimedia City and the ETS (Tremblay and Rousseau 2005a; Tremblay and Rousseau, 2006a; Tremblay, Klein and Fontan, 2009). The relation between *territory* and *innovation* generates an innovative approach based on the close linkages among university/research environments and high-tech/creative enterprises. This connection could represent a new territorial dimension of innovation as well as the advancement from the typical model of *linear technopole* of functional theory to *the innovation cluster* of relational proximity-based theory (Camagni and Capello, 2009). The *relational-based* approach will be our framework of analysis since we intend to show that the Innovation District could be considered more as an emerging *innovation cluster* than a *linear and functional technopole* as is the case for 22@ appears in Barcelona.

This research was done using an interdisciplinary *systemic approach* that involves a geographical and economic prospective to understand the dynamics of urban growth in central metropolitan areas which are undergoing a techno-creative process of regeneration (Aydalot, 1986; Benko, 2003; Massard and Torre, 2004; Camagni and Maillat, 2006). In particular, the geographic analysis is supported by the theory of spatial regulation, which leads us to understand the urban system and its economic and territorial innovations based on the post-fordist economy (Benko and Lieptiz, 1992). This article is based on a number of methods, including 14 semi-structured interviews, some done on site, others by phone, as well as a detailed analysis of documentary sources on the Montreal and Barcelona cases. As a start, we obtained information from municipal reports, scholarly publications, newspapers articles and studies undertaken by various institutions. Then, in-depth semi-structured face-to-face interviews were conducted with experts and local authority representatives involved in the governance of the areas.

1 Techno-creative clusters and technologic districts as a model of new urbanization in Barcelona and Montreal.

Cities have become pivotal driving forces of development, locally in terms of regeneration of depressed areas and marginalized sectors and globally for regional competitiveness and trans-border cooperation. Cities are *techno-hubs* of global flows and they play the role of centers of innovation, as well as of new production and creativity regulated by relations of competitiveness and cooperation (Conti and Spriano, 1990; Porter, 1998; Crevoisier and Camagni, 2000; Tremblay and Tremblay, 2006). The current development of the *knowledge economy*, regarding networks and pipelines of material and immaterial flows of production and techno-creative innovations, highlights the economic paradigm in which goods and services are not tied up, as before, with the local factors of the Fordist system (Porter, 1998; Landry, 2000; Porter 2000). However, we observe the new effects of a recent clustering agglomeration process related to the development of local economies based on innovation and creativity. Therefore, the high-tech districts, as well as the *technopoles* and techno-creative clusters, emerged as new models of regional development based on the relation between territory and socio-economic innovations (Adaylot, 1986; Carluer, 1999; Gertler and Wolfe, 2005; Tremblay, Klein and Fontan, 2009). At this point, if we take into consideration a large number of cities and regions around the world, including Barcelona and Montreal, we could argue that local economies play a key role in supporting the development of innovative sectors of production.

In particular, proximity is a key factor of clustering development because it encourages interconnections, linkages and knowledge exchanges because of its physical, relational and organizational dimensions (Benko and Lieptiz, 1992; Porter, 2000; Klein, Tremblay and Fontan, 2003a). Recent studies have analyzed how the geographical factors of proximity support the economic dynamics in terms of *techno-creative clusters and technologic districts* which transform the regional assets of growth (Porter, 1998; Castells, 2004; Stolarick and Florida, 2005; Cohendet, 2010; Tremblay and Tremblay, 2010). The urban scientific parks represent this model of urban change both as economic poles and as territorial districts of creativity and innovation. In this way, the 22@ in Barcelona is a model of economic revitalization that could be interesting for designing the future scientific park of Montreal (ID)¹. Although the increased flexibility in production processes and economic services has favored the vertical disintegration of spatial relationships and socio-economic actors, a new dimension of industry localization has been highlighted recently on the basis of a close spatial proximity and mutual synergies. In the last twenty years, economic theories have focused on these new phenomena of polarization and territorial innovation, seeking to analyze the regional development

¹ As we know, the development of the city is a very complex process in the age of globalization, mostly considering the competitiveness between cities (Veltz, 1996; Camagni, 2002; Porter, 2003; Camagni, 2005, Tremblay and Tremblay, 2006). Therefore, it becomes important to consider the city as a dynamic economic system based on the new creative sectors like the multimedia and high-tech productions. These sectors demonstrate that Montreal and Barcelona are changing their economic profiles and re-organizing their territories upon the creative economy.

processes by functional, systemic, and relational perspectives (Camagni and Capello, 2009).

According to our research, the *milieux innovateurs* (Aydalot, 1986) and the *technopoles* (Benko, 2003) approaches can be considered interesting because they represent two theories aimed at clarifying the local dynamics of development and, in particular, the relation between *territory* and *innovation*. The *milieux innovateurs theory* focuses on the socio-economic factors which produce innovation and development in a specific territory. In this case, the territory is very important because with its local and environmental elements, it can create and support the innovation process as an endogenous factor of development. The local actors and the nature of the territory are the main assets of socio-territorial innovations and the *interaction process* between varieties of players represents a crucial role in the innovation dynamics. Therefore, this approach appears useful for our study on the urban scientific parks of 22@ and QI. In fact it takes into consideration as a focal issue the closing synergies and interactions between local actors and the specific features which foster the economic development in terms of territorial innovation and creativity. The territory is considered the core and the active pivot of innovation both concerning its *socio-economic structures*, and considering its *relational and organizational networks* (Aydalot, 1986; Camagni 1995a; Carlucci, 1999; Crevoisier and Camagni, 2000). The territory is considered as a specific platform of multiple actors which must achieve common targets of sustainable development and shared governance. In this case, *innovation* is a factor of development which constitutes the nature of a particular territory as well as a strategic asset of growth generated by local resources.

Following this approach the *mutual synergy* and the *cooperation* between different actors are the crucial elements for supporting the territorial innovation and the cultural creativity process. However, the theory of the *technopole* can be considered as another important approach for analyzing our case studies through a complementary framework. Technopoles can be interpreted as local productive systems that permit the implementation of a new economic organization of regional growth based on the high-technology industry. They form a new economic framework of local system as well as territorial expressions of an international network of technological production. Therefore, the technopoles are a focal point of new interactions between regional and macro-regional economies (Benko, 2003). They are technological centers of innovation and creativity and new urban centralities of planning and territorial regeneration. They symbolize a key role in the economic revitalization based on the high-technology activities and social innovations of a specific zone (like the central dismissed industrial areas of 22@-Poblenou and ID-Bonaventure Area). Usually they are supported and financed by local governments which are connected with universities and R&D centers. This is motivated by a will to increase the growth of high technology industry and scientific production, by the creation, attraction and promotion of new firms and innovative sectors. They foster the territorial and economic regeneration supporting the synergy and the knowledge exchange between different players which share trajectories of development and goals. Indeed, we can consider the technopoles as specific poles of economic attraction in which different players boost the high-technology activity and scientific productions.

In this case if we take into account 22@ in Barcelona and ID in Montreal, we can consider these two districts as “*open technopoles of new generation or innovative scientific urban parks*” which are generating “emerging” technological districts. They are both ex industrial zones converted into technological territories of predominantly small and medium size enterprises, which have networking relations in terms of complementarities and competitiveness. These territorial contexts (22@ and ID) encompass both public and private higher education establishments and research/scientific institutions, creating a mutual synergy between the high technology clusters and the academic fields. In this case the urban scientific parks of Poblenou and the emerging *Quartier de l’Innovation* are based on a high level of territorial innovation as well as a demarcated spatial concentration of new economic activities. We will carry out our research focusing on the most constructive and complementary elements of these two approaches. We have also considered the spatial regulation theory as the main general framework of analysis which regulates the role of multiple actors in structuring new territorial platforms of governance (Benko and Lieptiz, 1992).

Cities play a paramount role in structuring the governance of economic spaces through a range of multi-dimensional processes which involve different socio-economic actors (Sassen, 1991; Benko and Lipietz, 1992; Velts, 1996; Storper and Scott, 2009). Local stakeholders polarize resources in terms of knowledge, skills and capitals in specific regional hubs for implementing socio-territorial innovations and fostering creative networks of production (Tremblay and Tremblay, 2006; Tremblay, Klein and Fontan, 2009). Cities become regional poles of development supported by clustered local economies and techno-metropolitan sectors of growth. They play an important role in the growth of local economies supported by the dynamics of concentration, flexibility and clustering specialization of economic activities (Feldman 1994; Porter, 2000; Tremblay and Tremblay, 2010). On the one hand, the *clustered territorial system* fosters local economies with reference to local assets and indigenous skills (Scott and Storper, 2003; Sacco and Ferilli, 2006). On the other hand, it activates a series of dynamics which generate development at both regional and national levels in order to lead the economic changes from local to global systems (Castells and Hall 1994; Porter, 1995; OECD 2004; Camagni and Maillat, 2006).

In our study we hypothesize that public intervention (top-down policy) in 22@ has generated the cluster formation, because it has been developed following a top-down strategy of governance. In the ID case, we hypothesize that a variety of multiple players/actors will form a hybrid and horizontal platform of governance. Consequently, a network of actors in the ID is building a significant range of players formed by institutions, enterprises, research centers and universities. In this case, the model of regional development based on the *interfacing synergies* of local stakeholders is crucial to understand how clustered technological districts can transform their functional organization and play a role in changing the economic assets of the post-modern metropolis (Harvey, 1990). Camagni and Maillat (2006) suggest that the *city-network* can be read along different urban dimensions, considering temporal and spatial vectors, as

well as inner and outer spaces of multiple territorial organizations². Some scholars suggest that the hierarchy of ranks among urban functions has been transformed into a hierarchy of networks, which leads to reposition cities in terms of their global organizational clustering systems³ (Feldman, 1994; Veltz, 1996; Landry, 2000; Sassen, 2001). Therefore, the local urban systems tend to be complementary and competitive with others in order to foster spatial integration as well as a strategic regional development of the territory which is based on the new local dynamics of innovation (Hutton, 2004; OECD, 2009; Tremblay and Tremblay, 2010).

2 A first approach between 22@ and the Innovation District

The first part of this study examines the transformation of *Poblenou* into the *techno-creative district* of 22@. We initially highlight the factors contributing to the socio-economic transformation of this area and their effects on the neighbourhood. Consequently, the second part investigates a specific area embedded in the south west portion of Montreal, which could take advantage of the 22@'s experience to establish guidelines to be used to design its own development plan. Indeed, this territory denominated *Bonaventure Area* is going through a period of major changes. It seeks to reposition itself as the "*Nouveau Quartier Innovant*" (*QI*) of Montreal (ETS, 2010). This ex-industrial neighbourhood, located between the Old Port and the Lachine Canal, bordering Griffintown and embedding the *Multimedia City* and the *City of Electronic Commerce*, represents a specific urban district with high technologic vocation (Scott, 2006; Evans, 2009; Tremblay, Klein and Fontan, 2009). Why have we chosen to study the territory of Poblenou in Barcelona and carry out a comparative study with the Montreal metropolitan area of ID? Not only could we easily observe some similarities in the geographic, political and socio-economic profiles of both urban regions but there are two main reasons for carrying out this comparative study.

First both Barcelona and Montreal represent metropolitan spaces of intensive technological growth polarized around external peri-urban corridors as well as concentrated in central neighbourhoods like Poblenou-22@, Griffintown, Bonaventure Quarter, and the Old Port. It was therefore of interest to assess how 22@ can serve as both a development model for Montreal and an international reference point for a better governance of the dynamics of revitalization. Second, the urban strategies elaborated by the Provincial Institutions of Quebec and the City of Montreal have shown interest in the 22@ regeneration project as well as a model of governance. Creativity and innovation are

² At the most basic level the *city-network* appears as a single entity. At its most complex level the urban phenomenon presents itself as a network that innervates progressively larger areas, and configures multi-scalar structures consisting of *selective networks of networks*. The urban entity is represented as an organism which is both a sign of *local identity* otherwise without distinctiveness, and an "*exploded entity*" in the territory, able to merge and join with other regional and local networks. The contemporary metropolis becomes emblematic of the dialectic relationship between local and global forces

³ Yet other geographers, however, have investigated the spatial dynamics of the city, with research dedicated to the morphology of the city, describing the *urban sprawl* and the *edge city* as a progressive large-scale urbanization process. All of them seem to agree that the metropolises can be seen as nodes of a global network which establish their economic influences in regional poles through a high degree of specialization as "suburban-centralized" areas and "multi-distributed centers".

two key factors of development for both cities, sustaining the repositioning of their strategic neighborhoods (*22@, Lobregat, El Besos, El Prat, Cité du Multimedia, Cité du Quartier Bonaventure, Commerce Electronique*)⁴. These zones are strategic areas which represent two dynamics of urban renewal. (a) The re-structuring of central neighbourhoods according to a multifunctional and multilayer perspective of uses. (b) The development of local economies founded on the synergy and complementarities between knowledge-creative clusters.

This socio-economic framework of differentiated *cultures of production* and the *production of cultures* defines the new organizational model of the both cities. According to the Van den Berg's model of urban cycle life (1987), we could describe this organization of urban restructuring as the final phase of a long process of urbanization which identifies the last regeneration in terms of innovation and creativity. These "innovative inner-cities", identified with the techno-creative clusters⁵ represent the *new urban centralities* embedded into urban scientific parks. This issue is evident in the maintenance and restoration of historical and industrial sites (e.g. Poblenu area and Canal Lachine Park). It shapes the identity of former economic sites as well as part of the texture fabric of postmodern city. There is currently in Montreal an emergence of *new techno-creative areas* defined by local actors, not yet institutionalized by local governments but coordinated by the scientific institutions, which collectively seeking to play a networking role in establishing a *new platform of governance*.

These hybrid spaces of renovation are concentrated in the Old Port and the waterfront area (Vieux Port, Faubourg des Recollets, Lachine Canal, Griffintown, Quartier Bonaventure and the sector *Sud-Ouest*) with the objective to generate new creative clusters of innovation and research as well as to develop mixed commercial and residential buildings in the neighbourhood. *Concentration* (in terms of proximity), *specialization* (in terms of competitive and complementarities clusters), and *innovation* are three elements at the core of the clustering process in the area. These clusters are formed by private and public firms, local communities, associations and authorities as well as universities and R&D institutions. They are supported by local resources and an endogenous atmosphere which characterizes the creative ID@city⁶. These *techno-creative districts* are defined by their features of flexibility, multidimensionality and multi-layered processes of economic production (Becattini 1991; Fontan, Klein and Tremblay, 2005; Bagwell, 2008).

3 Hyper-Barcelona: 22@ as a creative district of innovation.

⁴ An interesting issue in Montreal is how techno-creative sectors have become *factors of local renewal*, as well as strategic clusters for fostering *spatial integration* between enterprises and the territory on the one hand, and between firms of different sectors on the other. In this manner, they achieve horizontal complementarities and specializations while emphasizing the creative vocations of the territories.

⁵ By the study of clustering development processes and their nature, some works have identified four stages of clusters: latent, developing, and established and transformation.

⁶ In addition to this, we believe, by applying this approach to clustering sectors, that creativity and proximity (geographical, institutional, relational and organizational) are two important factors to enhance an overall and radical urban change toward an *industrial to techno-creative city*.

The 22@⁷ district of innovation encompasses the former industrial neighbourhood of Poblenou, once a concentration of factories and industrial sites that served the entire region of Catalonia. It has gone through a very difficult period of socio-economic depression and marginalization, as well as territorial fragmentation before being revitalized into an innovative multi-clustered district. It used to be considered a concentration of brownfield sites and degraded areas, cut off from the rest of the city and not integrated into the metropolitan fabric. An important factor of transformation has been the 1992 Summer Olympic Games, which resulted in renovation initiatives all over Barcelona. This manufacturing district used to be a vast degraded and fragmented space. Due to its functional characteristics and its centrality, Poblenou later became attractive in terms of clustering of innovative economies (Oliva, 2003). The first modern industries of Barcelona were established in this district from 1850 onwards, taking advantage of the abundant underground water sources, free and open spaces and the ease of access to the port, which acted as a gateway for incoming raw materials and coal, as well as manufactured goods – mostly textile production – exported to foreign markets. Later on, the food industry and agricultural market developed alongside the textile sector and the metal industry, the last of which became the dominant sector in the area. Recently, at the end of the 1960s, with the relocation and dismantling of many such industrial sectors and areas, logistics and transport became the main sources of economic development (Diputacio' de Barcelona, 2000; Ajuntament de Barcelona, 2003; Oliva, 2003). Up to here, a long process of urban decline affected the district which could not restore its identity, but only emphasized the discontinuities between the area of Poblenou and Barcelona caused by the railway lines and the different City Plans (Cerdà grid 1859-1953; Country Plan 1976; General Metropolitan Plan 1980)⁸.

Today, the transformation of the industrial area of Poblenou is part of a larger strategic plan developed for the eastern side of Barcelona (La Sagrera, Rambla Prin, Diagonal, Besos). This plan includes:

- A new high-speed inter-modal railway station (La Sagrera);
- A new regional/international hub (Plaza de las Glories);
- New urban multi-functional spaces (ex. Media-Tic building and Torre Agbar).

The reforming process of the area began in 2000 with the elaboration of a strategic plan to achieve a radical transformation of the Eastern part of Barcelona and to establish a new socio-economic identity (Delgado Ruiz, 2007). The urban policy aims at creating in the next ten years (2020) a *great technological neighbourhood* based on the innovative sectors (NTIC, Multimedia, Energy, Biotechnology, and Design) . The denomination of

⁷ In this area has been a modification of the General Metropolitan Plan (passed on 27 July 2000) in order to allow for the establishment of new activities and the combination of uses. The old zoning of industrial lands has been transformed into a new techno-creative area, known as 22@. Aims to attract activities linked to emerging sectors in manufacturing and creative industries like software production, telecommunications, multimedia, press and editing, artistic activity and R&D.

⁸ It was not until relatively recent residential operations, starting at the end of the 1980s with the removal of the over ground railway lines and the construction of the Olympic Village, that the transformation of the whole of the sea front and the completion of the Diagonal through to the sea permitted Cerda's old plan to be finally completed, with the consolidation of the *Eixample grid* and its main diagonal roadway, the urban backbone of the sector.

22@ was established considering the criteria for the transformation of the land previously classified as *industrial land* by the PGM (22a classification). The 22@ Plan establishes the criteria for the conversion of the obsolete industrial areas into a sector suited to new forms of production based on the *information and knowledge economy*. It is a district of “excellence” and creativity: an attractive zone of innovation and technology based on the multi-clustered sectors.

It aims at increasing local assets of growth to foster global networking skills through international partnerships (Barcelona Activa, 2008; Fundacio Kreanta, 2010). The 22@ district represents the combination of its *local dimension* – as a set of territorial and economic characteristics, such as social and territorial identity and social and cultural fabric of the territory – and a *global economic dimension*. The director of the Urban Planning Office of Barcelona affirms (Ajuntament de Barcelona, 2004, p. 39): “22@ represents the new key of urban planning which the Barcelona Government wants to foster in order to change the territorial uses and the economic features and transform Poblenou into a technological district”. We can affirm that 22@ is a challenge for both Barcelona and the overall Mediterranean regional system because it represents the chance of repositioning and re-structuring the European outline which is too oriented towards Central Europe (Cattan, 2007).

4 The industrial area of 22 @ between urban regeneration and Knowledge Economy: the new urban techno-scientific park in Barcelona.

The 22@⁹ project embodies an urban and socio-economic change, moving from a former textile and logistic industrial area to an innovative neighbourhood in order to implement the process of urban planning and to revitalize the local economic system. This twofold strategy has been formulated to attract innovative firms belonging to five clusters (New Information Technology and Communication (NTIC), Multimedia, Medical Technology and Biotechnology, Design, and Energy). It is important to note that a focal role in boosting a clustering concentration has been played by research centers (R&D) and specialized university departments which have supported the agglomeration process and the attractiveness of high-tech firms. But some experts affirm that this strategy has been too fragmented and oriented towards an economic revitalization, without considering socio-cultural parameters. This is a critical point that could be useful to better address the ID local policies in Montreal. At last, the final target has been to develop the territory of Poblenou with the objective of building and raising a *multi-clustered technologic district of knowledge economy*. Project 22@ was planned following two main strategies:

- (i) Developing a master plan in order to build a new creative neighbourhood.

⁹ Barcelona City Council has created a firm denominated 22@bcn S.A., entirely founded with municipal capital, to serve as the main force behind the development of the area. This way, an independent management agency of economic local development has been created, bringing together the instruments and expertise required to manage the transformation process.

- (ii) Achieving the reconversion of economic activities for the attraction and promotion of local and international firms in Poblenou.

Until now, the local actors (public and private) have established new and flexible criteria of governance to transform the neighbourhood into a *creative advanced district* as well as to define a range of significant targets which must develop a *multimodal platform of production, innovation, and creativity*.

22@ embeds this territorial platform: it represents a hub of networking players and interfacing areas based on the multi-scalar and transversal relations. The synergy between institutions, business communities, universities and research centers should be the main factor of strategic governance (e.g. the Network of Science and the Technology Parks of Catalonia in 22 @ - XPCAT). Since its foundation in 2000, the innovation district has managed to attract more than 1,400 firms in the fields of NTIC, biotechnology, Multimedia and Energy, thus also attracting national skills and talents to activate a process of revitalization aimed to transform Barcelona into the *digital city* of Europe. Nonetheless, some prestigious universities (IESE, ESADE, EADA, UB, UAB, UPC, UPF, URL, UIC, UOC, IAAC)¹⁰, R&D/R&I centers and digital services like “*infrastructures 7@*”¹¹ have created a successful platform of synergies, exchange and interconnections in Catalonia. Thus, the urban reform of the metropolitan plan of Poblenou (PERI) is founded on the new economic activity 22@ and technological services with the aim to change the local assets and the economic organization. We observe that more than half of the companies installed in the 22 @, 53 out of 100 exactly, operating in either of the four areas of excellence –that are ICT, Multi-Media, Biotechnology and Energy, have intensive relations with the research centers and universities. 22@BarcelonActiva, the local development agency, plays a strategic role in supporting and attracting local and foreign companies. Poblenou went from being considered a *depressed and fragmented area*, with only about 2% of Barcelona’s economic activity in the industrial area and 4% in the urban area, to a *new economic centre*. Today, 70% of the new firms operating within 22@ are considered strategic clusters (the 4 areas of excellence mentioned above plus the addition in September 2009 of a fifth clusters, Design) are located in this neighbourhood. 45% of these new firms are a “new creation” with 42,000 new jobs (the future perspective is 150,000).

Poblenou was an intensive zone of industrialization and production called “*the Catalan Manchester*” because it represented a huge vertical agglomeration of heavy industrial

¹⁰ Business School-University of Navarra (IESE); Business School – Universitat Ramon Llull (ESADE); Escuela de Alta Direccion y Administracion de Barcelona (EADA); Universidad de Barcelona (UB); Universitat Autònoma de Barcelona (UAB); Universitat Politècnica de Catalunya (UPC); Universitat Pompeu Fabra (UPF); Universitat Ramon Llull (URL); Universitat Internacional de Catalunya (UIC); Universitat Oberta de Catalunya (UOC); Institute for Advanced Architecture of Catalonia (IAAC).

¹¹ 7@: Barcelona Activa Local Development Agency; New Space of Labour Market “Puerta 22”; Training Center of Can Jaumandreu IL3 (UBE); Universidad Oberta de Catalunya (UOC); Barcelona Televisión; Radio Nacional de España; Communication Campus of Pompeu Fabra University; Centro de Producción Audiovisual; Media-Tic building.

firms. Many years later, the economic crisis has made this port area collapse. It has also created a deep degeneration process of territorial fragmentation and economic marginalization. Nowadays, the global context is changing and a real strategy of regeneration has been approved with a special plan of reforms (2000). The area is growing fast, with a perspective of development re-launching a new economic model based on the high-technologies. We observe five clusters of development transforming the industrial area into an *integrated innovation district*. The five clusters are classified in terms of territorial localization, typology and accessibility, and spatial planning. These clusters are formed by: MEDIA (Multimedia), NTIC, Biotechnology, Energy and Design (table n. 1).

MEDIA	
<i>Firms:</i>	MediaPro (Imagina), AND, Lavinia, Cromosoma, Yahoo I+D, Editorial Group RBA, Vistaprint.
<i>Institutions:</i>	Radio Nacional de Espana, Conseil AudioVisual of Catalunya (CAC), Barcelona Televisioè, Audiovisual Production Center (PMB).
<i>University:</i>	Pompeu Fabra University (UPF), University of Barcelona (UB), Open University of Catalunya (UOC).
<i>Technological Centres:</i>	Barcelona Multi-Media Centre of Innovation (CIBM).
<i>Incubator:</i>	MEDIA-TIC Building (Consortium Zona Franca+22@) – Imagina Building 12.000 msq (22@+MEDIAPRO).
<i>Residence Area:</i>	Melon District and Ciutadella.
<i>Synthesis:</i>	The role of actors is based on a deeply connection and convergence among several public and private institutions. It is the stronger cluster in 22@.
NTIC	
<i>Firms:</i>	T-Systems, Indra, Telefonica I+D, Yahoo Europe, Casio, Orange, ONO.
<i>Institutions:</i>	(CMT) Market and Communication Commission, (FBD) Fundacio Barcelona Digital, Localret
<i>University:</i>	UB, UPC, La Salle
<i>Technological Centres:</i>	Techno-Center TIC Barcelona Digital, TIC House (Council of Barcelona+Fundació Barcelona Digital+Generalitat of Catalunya).
<i>Incubator:</i>	Edificio Media – TIC Barcelona Digital (ACC1Ò) strategic point of Catalunya technological network, 22@Interface Building.
<i>Residence Area:</i>	Melon District.
<i>Synthesis:</i>	NTIC is a key asset of cluster development and point of reference for European networks. Two examples of this progressive growth and interconnection are 22@Living and Lab (22@Barcelona+Fundacio Barcelona Digital). They represent a kind of urban laboratory-space connected with other urban laboratories, supported by public and private firms and associations. The other project is denominated “ICING” (Innovate Cities for Next Generation), that is an European program for enhancing and promoting research and development activities in urban areas.
TecMed - Biotechnology and Medical Engineering	
<i>Firms:</i>	Matachana, Gaes, Sanofi Aventis, Isdin, Telemedicine, Camp I Jové.
<i>Institutions:</i>	Banco de Sangre and Tejidos, CatSalut, CIDEM, Bio-Region of Catalunya (Blocat).
<i>University:</i>	UB, UPC, UOI,

<i>Technological Centres:</i>	Building Health, Business Park BIO Barcelona (PCB-UB), Research Bio-Medical Park of Barcelona.
<i>Incubator:</i>	TecMed 22@ LAB
<i>Residence Area:</i>	Nido
<i>Synthesis:</i>	R&D and R&I centers are the main actors of development.
Energia (ITER)	
<i>Firms:</i>	Endesa, Ecotecnia, Agbar
<i>Institutions:</i>	ITER, IC3, CETAQUA, European Agency of Fusion.
<i>University:</i>	UB, UPC, Escola d'Enginyeria Industrial de Barcelona, IREC (Instituto de Investigacion en Energia de Catalunya).
<i>Technological Centres:</i>	No
<i>Incubator:</i>	Besos InterUniversity Campus Business and Technologic Campus de Barcelona (b_TEC) – 148.266 mqs
<i>Residence Area:</i>	b_TEC
<i>Synthesis:</i>	The ITER is a research and development project experimented to produce electrical energy through fusion at world scale. The ITER's headquarter is based in France (Cadarache), but 22@ hosts the European Fusion Agency which coordinate ITER.
Design and Architecture	
<i>Firms:</i>	G-STAR Raw, ADD, Node, Morera Design, Ruis+company, Estudi Arola
<i>Institutions:</i>	BCD
<i>University:</i>	Palo Alto, PBM, Hub Design, University of Vic, UPC, IAAC
<i>Technological Centres:</i>	Barcelona Media Center of Innovation
<i>Incubator:</i>	Media-TIC, Project Bressol Moda
<i>Residence Area:</i>	Melon District/Ciudadella
<i>Synthesis:</i>	It represents the emerging cluster borne in September 2009.

Table n. 1: Clusters and main economic stakeholders of 22@ District.

According to the local map inherent to cluster's agglomeration in Poblenou, we can observe that the first four clusters are located in specific zones but the last one is spread over the territory without a special perimeter. We believe that this territorial organization in four main hubs gives to the clustered process a better dimension of integration. Storper and Scott (2009) suggest that this synergy among clusters stimulates and increases the competitiveness and the complementarities in order to boost and upgrade the local economy. An important role is assumed by Universities (10 national and international academic institutions with 25.000 students) which are planning establishments in the district with many departments and research centers which are connected with the business sectors¹².

The main actors playing a role of supporting and developing this process are the following:

¹² The 10 Universities and Departments are: EMAV; IL-3; UOC; UPF Comunicacio; Instituto SAE; BAU; School of Professional & Executive Development (UPC); UPF Ciudadella; Edificio Health; B_TEC, Universidad UPC (ETSEIB+EUETIB) (Ajunamente de Barcelona, 2008).

- (i) Strategic firms embedded and clustered in the area with specialized knowledge and expertise.
- (ii) Local and national Institutions (e.g. BarcelonActiva, Puerta 22).
- (iii) Universities and R&D.
- (iv) Specific incubators and multi-functional services managed by local associations.
- (v) Strategic networking platforms of different stakeholders which can exchange information, innovation and knowledge.

It is important to stress on the two following factors sustaining the growth in terms of flexible process of regeneration of 22@ district. On the one hand, we have to consider the *innovation capacity* and the *business-cultural atmosphere* of the overall system of firms which not only support but also increase technological spreading and local attractiveness. On the other hand, 22@ is an urban model of development acting as a *new concept of @city* with the coexistence of physical and virtual urban spaces. The 22@ project attempts to bring together different dimensions of territorial configuration where material and immaterial flows build the new city, creating an uncertain and blurred border between identities and territories.

Thus, the *informational city- the @city* seems to build a new morphology of urban space which provides Barcelona with a new dimension of urbanization. To conclude, 22@ represents a special place where technologic and social processes of territorial organization are building a renovated neighbourhood which is formed by an interconnection of “xarxas” (networks) based on creativity and innovation. 22@ represents the *edge-city*, the *informational city*, the *heteropolis* or the *hub city* which has lost the traditional and linear relation between the center and its suburbs in favour of multiple centralities (DDAA, 2003; Mascarell, 2008; Borja 2010). 22@ is the dominant *techno-polis area* in which local and national stakeholders are connected by networks and linkages to increase the regional development of Catalonia. During an interview, the second chief-architect of 22@ says: “*I believe that urban planning strategy should develop and take into account some focal points like re-thinking to a social and an economic development process in order to increase the level of attractiveness and competitiveness in terms of infrastructure, accessibility and quality of life.....we cannot plan a space without considering social, creative and cultural elements..22.-district of Poblenou is a product of these changes which are modeling the morphology and the nature of the territory, not only in its physical dimension but mostly in its digital and virtual features, extending and transforming the real city into the digital metropolis*”.

Considering the 22@ project, we highlight some important issues related to policies and strategies.

- (i) 22@ is a formula of mixed urban residential, entrepreneurial, academic and training, collective, public and private, commercial, office parks planned by the City Council of Barcelona and approved in 2001.
- (ii) The new approach of development classifies the territory not only as an industrial space but also as a residential and economic area (the new urbanism of 22@ policy has modified the Master Regional Plan formulated in 1976).
- (iii) 22@ takes the traditional economic system and restores it towards an innovative urban, architectural and environmental identity, and therefore transforms the industrial areas into a *new model of compact and rational city* (BarcelonActiva, 2009).

- (iv) 22@ will be reformed by a special Master Plan which provides a complete high-quality urban environment change in order to reduce the environmental impact of infrastructures and mobility (Diagonal Street, Glories square and Sagrera Station; Bixi System).
- (v) 22@ represents the *new centrality* of Barcelona; it is accessible through three main *doors* rich in territorial and cultural identity: the Agbar Tower built by Jean Nouvel, the Forum of Culture built in 2004 and the future station of the AVE Sagrera (Ajuntament de Barcelona, 2000).



Fig. 1: 22@ District in Barcelona

Source: ETS and McGill, 2011.

Jordi Borja (2010, p. 163) suggests “*The limitations of Barcelona’s model appeared after twenty years of consensus and positive factors that have had a lifetime of logical and functional dimension but are now gone ... generating perverse effects of urbanization... Then we need to innovate in the urban policy and the urban culture in order not to re-create a social segregation model, pursuing the multifunctional and multidimensional development model*”.

The movement of opposition to the project 22 @ currently relies on a series of movements of neighbourhood committees and associations, as ex-industrial and worker area associations, having a strong tradition of social activism. There are four associations that try to claim the rights and the will of the citizens and inhabitants of Poble Nou, in order to influence the public debate on management decisions and plans. Three issues are discussed: (i) the criticism of the process and management decisions and strategies; (ii) the criticism of the type of urban projects formulated by decision makers;

(iii) the criticism related to social costs arising from the implementation of projects that lead to various adverse effects, including the process of gentrification.

The associations mostly denounced the lack of public participation in drawing up the plan of urban district (PERI) and the pressure from real estate interests. Moreover, a strong point of contention is the urban planning in terms of height of buildings and building landscape. The theme of the debate has shifted from a discussion about the reconversion of buildings and activities to a deeper intellectual discussion concerning the landscape and industrial heritage that should be protected and preserved as a historical memory. Ultimately, it is opposed to an architectural model that is alien compared to the existing urban fabric and compared to the social reality of the neighbourhood. Therefore, it is important to note how fundamental it is to maintain and support the archetypal Barcelona's model that was the key factor of good practices. To summarize, despite the fact that the 22@ model is able to provide to ID in Montreal some important elements of development, we can highlight three points which have limited the process of regeneration in the Catalan district.

- (i) A distance between the real estate interests and the social components of the neighbourhood.
- (ii) The limited participation of local community and social groups in terms of planning and governance.
- (iii) The process of regeneration has been more focused on the relations between private promoters and local institutions than on the synergy with scientific and research institutions.

To conclude, despite this criticism and the effects of conflictual relations at times, the elements of innovation are transforming the urban space and re-defining new forms of life and social practices in Barcelona. Ten years after the planning of 22@, it represents a new urban experience in terms of accessibility, spaces of governance, and interaction between different actors which need today to re-address some actions in order to re-establish the archetype of Barcelona's model of participation.

5 The Innovation District in Montreal: a comparative analysis of an emerging district in terms of potential integration and future governance.

The Innovation District represents a potential area of development in Montreal. It is located between two different *arrondissements* (Ville-Marie and Le Sud-Ouest) and it embeds a strategic zone of economic revitalization. The territorial framework is very interesting because it expects to be the first scientific urban park located in Montreal's core. The local policy formulated for the Innovation District (ID) has considered as a fundamental axis of regeneration the urban strategy "*Montreal 2025 – Montreal Technopole*" which plans to transform Montreal into an international *creative city* (Ville de Montréal, 2005; Stolarick and Florida, 2006; Pilati and Tremblay, 2008). Montreal will represent the new metropolis which will be characterized by a high level of innovation and creativity (Ville de Montréal, 2007). In the area of South-West where the ID is living its first process of territorial organization and planning, we can highlight four main strategies of development focusing on the following:

- (i) Attracting and establishing emerging new firms and innovative economic sectors (NTIC, Multimedia, Biotechnology and Engineering and Electronic clusters).
- (ii) Fostering and boosting partnerships and connections between scientific community and business environment in order to develop a mutual synergy.
- (iii) Developing an urban and multi-functional scientific park which reproduces a real living neighborhood.
- (iv) Creating an incubator pole for scientific production and research activities.

The main stakeholder and promoter of the ID is the ETS (*École de technologie supérieure*), a university which aims to develop and to encourage future partnerships among different institutional and academic players¹³. The main targets elaborated in order to boost and plan the Innovation District are the following:

- (a) Building a new *urban centrality* denominated by an *ecosystem of innovation* where the ETS will be the center of the urban scientific park.
- (b) Encouraging the process of clustering innovation and promoting “incubators as cells of open innovation” like the new project INGO (*Carrefour d’Innovation*) which embeds the quadrilateral area of the Brasserie Dow.
- (c) Integrating the *techno-creative quarter* with the *cultural corridor* of the Ottawa street and Griffintown area, in order to promote a multi-dimensional area and multi-functional pole based on art and creativity.
- (d) Developing an urban regeneration strategy for implementing the quality of life and a socio-cultural perspective in the area.

Thus, the *ID@ – ecosystem of innovation* – could represent the new regenerated neighborhood in Montreal as is the case for the *district 22@* in Barcelona. The following table compares the two districts and it seeks to highlight their differences and similarities. It suggests the features of development process for better addressing the policy makers to formulate successful urban strategies in terms of governance and planning (table n. 2).

<i>22@</i>	<i>QI</i>
<i>PLATFORM OF INNOVATION</i>	<i>ECOSYSTEM OF INNOVATION</i>

¹³ The integration process between local players has to foster:

- (i) Developing an institutional integration among different local stakeholders;
- (ii) Increasing the level of interconnections and exchange between local players, public and private institutions and business sectors.
- (iii) Fostering and encouraging the interconnections and the links between academic and scientific institutions and innovative firms.
- (iv) Encouraging the role of scientific institutions and innovation centers as important hubs for networking complementarities located in the neighborhood.

Consolidated multi-clustered district (4 consolidated clusters and 1 emerging)	Emerging clusters of innovation (2 consolidated clusters (<i>Cité du Multimédia and Cité du Commerce Electronique</i>))
Economic and territorial regeneration fostered by institutionalized top-down strategies	Socio-economic regeneration based on scientific and strategic partnerships boosted by multiple actors (<i>réseau ouvert des acteurs</i>)
Old industrial and port area on the east coast of Barcelona.	Ancient industrial and port area around the Canal Lachine.
Real estate interests and innovation in terms of attractiveness of firms and institutions (strategic platform of governance among major actors)	Research activities and innovation in terms of academic and scientific pole and strategic partnerships (strategic ecosystem of innovation)
Local/Regional/International level of development	Local/Provincial/Federal level of development
Strong level of integration between local institutions but low synergy with scientific and academic players (top-down)	Emerging networking and connection among local stakeholders in order to increase integration and synergy (top-down and bottom-up)
Key role of local and national Governments, and EU	Key role of ETS and McGill in the first phase of planning.
Regenerate the relation between the city and its eastern cost.	Revitalize the district and its South West Side with Canal Lachine.
Lack of social life and living neighborhood.	Attention to quality of life and mixture/attraction of socio-economic groups
Intensive political and municipal strategy following specific interests.	Open participation on the objectives and different interests.
European centre of techno-creative networks based on central metropolitan area.	New regional and metropolitan centre of innovation based on Montreal's New Techno pole.
Strong city branding of 22@ since 2000	Emerging process of identification in 2009
Surface of project: 200 hectares	Surface of project: not yet defined

Table n. 2: 22@ and ID: differences and convergences.

Definitely, the ID@ represents the biggest regeneration project in Montreal which seeks to plan and to reform the industrial area of Canal Lachine. We can observe different actors which play a key role in the different zones and functions. The main local players and the central areas of urban change are:

- (i) ETS and its buildings and surfaces (Coordinator hub).
- (ii) Bassin du Nouveau Havre
- (iii) Griffintown as main creative and cultural area.
- (iv) Nordelec as main incubator actor of innovative and creative firms.
- (v) Cité du Multimédia (techno-cluster)

- (vi) Planetarium (New space for R&I)
- (vii) Cité du Commerce électronique.
- (viii) Residential area of Jardin Windsor
- (ix) Quartier Bonaventure.

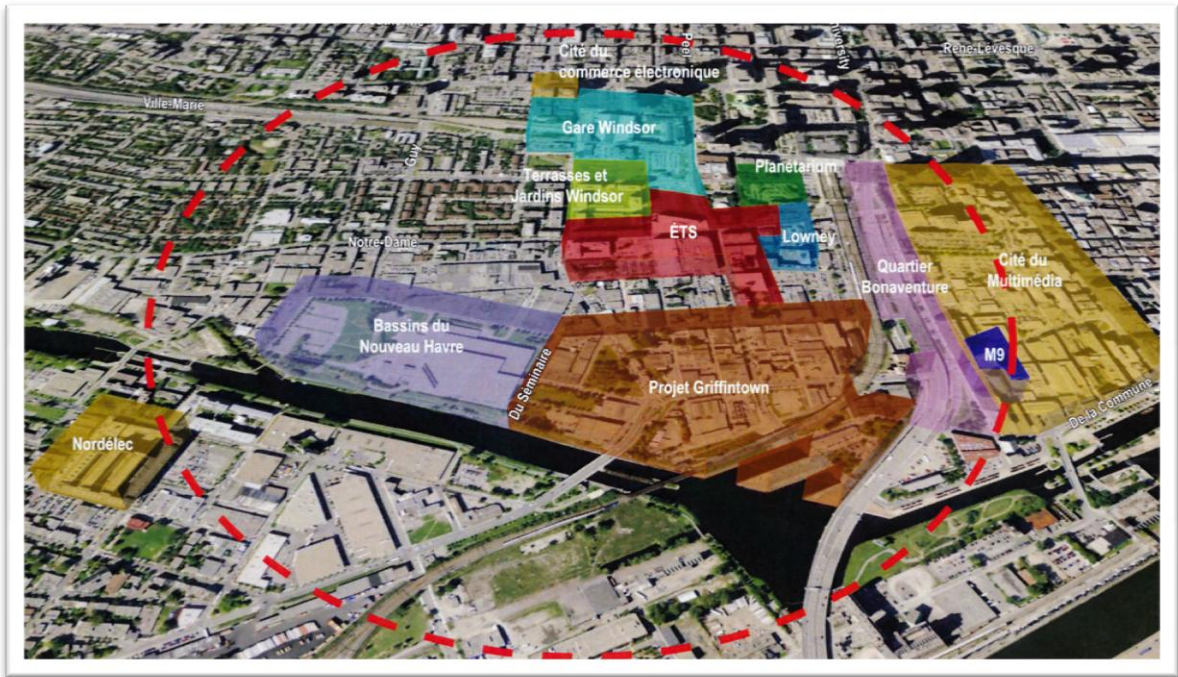


Fig. 2: Strategic Plan of the Innovation District in Montreal.

Source: ETS and McGill, 2011.

The potential framework of territorial regeneration defines different multi-use areas which are embedded in the Innovation District (ID). The ID must build an integrated system of governance elaborated by local actors in order to exchange knowledge, *savoir-faire*, innovation and talents and to make a *new space of regulation* for this territory (Benko, 2000).

During an interview, the director of ETS says: “*It is necessary to implement and foster the process of regeneration through multiple criteria of innovation. The innovation must be an open and hybrid innovation as well as rich in technology and social features. We must produce socio-territorial innovations and create an urban park where the research and training activities as well as the scientific and industrial productions are interconnected with the dynamics of the neighborhood...An important example is the project INGO which aims at creating new cells of innovation based on this incubator-space in order to attract activities and firms related to the scientific sector of ETS...It will be essential to increase the integration process in all its different dimensions (spatial, territorial, economic, creative, organizational, relational and institutional), and the ETS plays a key role to establish a strategic partnership...The innovation District (ID) will also see a*

growing number of talents and researches. Today 20.000 workers work in the knowledge economy sectors and they live in the neighborhood". We must create a kind of agglomeration and concentration of different actors if we want to attract the innovation and the creativity in the neighborhood. We must create a kind of open ecosystem of innovation and increase the interconnections at all levels in order to sustain an open innovation in the territory and develop a real living neighborhood". The open innovation involves a new approach which transforms the innovation management system within large and medium-size enterprises. Rather than limiting themselves to their R&D in order to develop new products or new services, more and more firms prefer to establish strategic alliances with "external partners" such as universities (McGill and ETS) and research centers.

Therefore, the universities act as pivots of improvement and advanced centers of production. They play a key role in building new relationships with business environments and different socio-economic actors. On one side, they encourage the creativity and the innovation in terms of production and dissemination of knowledge. On the other, they have and form resources in terms of human capital. Thus, the potential asset of development between the *Cité du Multimedia* and ETS is very strong since it already represents a significant cluster of media firms concentrated in the area, with almost 6.000 workers. The multimedia cluster operates with many innovative and creative firms and it has changed the local economy as well as the urban landscape around Canal Lachine. This cluster could be a pivot for development of other sectors, stimulating the emergence of other urban clusters, directly or indirectly, connected with the multimedia industry. Some scholars have analyzed these dynamics of agglomeration according to technologic development and concentration of creative firms into a specific area like ID and 22@, which have been already defined "*milieux technopolitains*" (Aydalot, 1986; Benko and Lieptiz, 1992; Benko, 2003).

These relations and linkages form a kind of atmosphere of intensive exchange of knowledge and creativity in the territory which supports and provides socio-territorial innovations in the area (Ville de Montréal, 2003; Ville de Montréal, 2005; Tremblay, Klein and Fontan, 2009). The socio-territorial innovations are the fundamental factors which sustain the local development process in the ID as well as they encourage the building of strategic partnerships between scientific/research environments and firms. The techno urban parks as the Innovation District are territorial and economic *micro-systems* of innovation based on high technological firms and supported by institutional, private and scientific networks with intensive and structured relations.

During an interview, the president of a strategic firm which has elaborated the strategic vision of the Innovation District says "*The governance of the development process must be able to mobilize the actors in the territory, synchronizing and coordinating different level of synergy in order to achieve shared interests. At the beginning, the difficulty is in formulating strong and cohesive strategies of development for each stakeholder...Definitely, our neighborhood must be an open, innovative and living district... must develop a neighborhood life which has been lacking for 22@ in Barcelona ...We need to create a true "Living-Lab" based on economic development, socio-scientific innovation and quality of life. In this sense, the ETS has an important role in mobilizing the various actors and increasing the relationships in the territory between universities and business environment. Unlike the Catalan model, we have the chance to create a synergy from the beginning of the process of governance, having the scientific/research infrastructures and a strategic position to build it*".

The ETS plays an important role in coordinating the different institutional and private actors in order to develop the *Innovative District*¹⁴. To summarize, the main objective is to create an urban technological park and to transform the South-West neighborhood into a new innovation district (Convercité, 2009; Lessard, 2010). This special environment enhances the emergence of *scientific and business microcosm* in terms of *bi-modular territorial organization* which will form an *integrated ecosystem of innovation*. During an interview, the director of RESO (Economic and Social Coalition of Southwest-CDEC) says: “*The regeneration process is determined by a network of actors from different horizons, which together are forging a strategic synergy to develop this fertile land. The strategic approach in terms of governance must combine technological innovation and social innovation in order to implement a strategy of participation and inclusion of local communities. We must create an open innovation system in the territory rather than a closed innovation system in order to avoid the creation of a technological ghetto. The objective is to develop a hybrid urban park founded upon the scientific research and innovation...The ETS would catalyze the dynamics of networking as actor-pivot of attractiveness and as scientific platform.*” We must underline that the potential innovation district has already a high concentration of creative industries and innovative firms (ETS, 2011). This concentration of enterprises is agglomerated into three *techno-poles*:

- The Multimedia City (Cité du Multimédia) which includes 70 small and medium innovative firms, specialized in the multimedia and NTIC environments (with 6.000 creative workers).
- The City of Electronic Commerce (Cité du commerce Électronique) which groups international enterprises like IBM, CGI, CSC and 6.000 workers in the NTIC.
- The Nordlec incubator building with more than 235 firms in the sector of multimedia and NTIC.

The local stakeholders have to valorize the cultural and creative complementarities which are already transforming the territory. The director of the consulting firm “Convercité” affirms: “*The ETS gave us the objective of elaborating the Master Plan of the Campus and we have made it with a strategic approach in order to plan the territory in two strategic hemispheres like a brain...we develop the left part, dedicated to research and academic performance...the right part will be focused on the creation, production and attractiveness of innovative firms...the strategic goal is to create a kind of technological and creative interconnection and exchange between the research sector (left) and the business sector (right)*”.

To conclude, the strategic areas like the Bassin de Nouveau Havre, Planetarium and *Quartier Bonaventure* represent important spaces of potential regeneration which will strengthen the consolidated hubs (Cité du Multimédia, Cité du Commerce Électronique, ETS, Nordelec). Therefore, universities and high technology industry linkages are an

¹⁴ The relations between the ETS and the industries are very solid and for promoting and increasing this exchange, the ETS has created two important innovation axes of development:

- (i) The *Centre de l'entrepreneurship technologique* (Centech), an incubator of innovative firms which has created and supported already 64 new firms.
- (ii) The *Centre d'expérimentation et de transfert technologique* (CETT) with the aim to sustain and encourage the exchange of technologic innovations between researches and business sector.

essential part of the knowledge transfer for the emerging clusters that rely upon this type of knowledge economy. The large industrial area around the ETS is living a radical change with a population of about 10,000 new residents and \$ 6 billion investment envisaged in the long term. In the next ten years, this neighborhood hopes to represent one of the most modern in North America as well as be the symbol of a new identity and brand for Montreal. These areas will embody a *new mega-pole of creative production based on scientific and research institutions (Universities, Departments, R&D), innovative clustered firms (Multimedia, Biotechnology, Design, Engineering and, Electronic), and artistic and cultural facilities (table n. 3)*. The ultimate goal is to create a multifunctional district and to promote a convergence of interests in order to produce a development process based on the integration and mobilization of local networks of multiple actors. As clearly shown by a first study done by the ETS, the of Innovation Quarter represents the main agent and pivot of integration (ÉTS and McGill, 2011- see table no 3).

URBAN PLANNING	ECONOMIC RECONVERSION	SOCIAL COMPONENTS
<i>22@Urban Technology Park</i>	<i>Old industrial sites</i>	<i>Associations and groups (cooperation and conflicts)</i>
22@ - Big Architectures and Buildings (MediaTic, Torre Agbar, Cibernarium, Forum Hall)	Textile and manufacturing areas Logistic and spaces with 5 developing clusters: Multimedia (I cluster) Biotechnology (ii cluster)	Voluntary Committees Representations of firms Puerta 22bcn <i>Espace Laboratorio BarcelonActiva</i> Development Agency
22@ - Media Urban Park	Energy (iii cluster)	22@ breakfast
22@International intermodal Platform (La Sagrera)	TIC (iv cluster) Design (v cluster)	Artistic, creative, and techno communities and spaces like <i>Cibernarium</i> .
22@New Universities, Departments	Art centers in Poblenou (Galleries and ateliers)	
22@ - Research buildings centers and Innovation spaces	Residential and new commercial activities	Lack of demand
22@ - Services & Infrastructures		

(metro, rail station, bus, Bixi)		Still inactive
ID/QI – ETS, private buildings and INGO	<i>Regeneration of ancient industrial area and spaces around ETS</i>	Students, researches, talents, managers (important mission)
ID/QI - Griffintown quarter; Canal Lachine and old industrial areas; Bassin du Nouveau Havre; Bonaventure quarter and new plan of transport.	Fostering and supporting new R&D and R&I centers (private and public) Improving the role of two developing clusters: (i cluster) Cité du Multimedia and (ii cluster) Cité du Commerce Électronique .	Talents, creative and business communities involve in the process of regeneration. Restaurants, boutiques and art galleries.
ID/QI – Rehabilitation of old industry “NORDLEC”	Nordlec as significant business incubator in the quarter (multimedia, design, architecture, fashion, engineering and local institution)	

Table n. 3: main features of 22@ and ID.

Conclusion

The aim of this comparative study was to analyze the process of strategic regeneration and economic revitalization ongoing in the technological districts and urban scientific parks of 22@ in Barcelona and Innovation@District (ID) in Montreal. 22@ and ID are two emblematic cases of central areas which have been revitalized in order to regenerate industrial zones and transform dismissed spaces into new centralities of high-tech production and creativity. The first part of this study has analyzed the neighborhood of Poblenou and its multi-clustered and creative district of innovation as a model of urban technologic park in Europe. The second part has showed the features of the process of governance and development in the emerging ID in Montreal which takes advantage of the best practices of 22@ without reproducing the negative effects in terms of regeneration and planning.

On the basis of our analysis, we have analyzed the model of technological parks and districts considering the approaches of *milieux technopolitains and technopoles*, as the main socio-economic structures of these emerging areas. As concerns ID, we have highlighted the role of local stakeholders, such as the scientific and research institutions (ETS and McGill), who play a key role to foster and implement a process of territorial and economic innovation. This *open neighborhood* will produce socio-territorial innovations with the aim of generating a new technological district as well as a new cultural and living zone denominated “Living Lab”. It will represent a district-laboratory integrated in the *ecosystem of innovation* which could be supported by a *synergic network of local players*. Certainly, innovation, creativity and territory are three fundamental assets which can boost economic competitiveness and socio-territorial innovations in the Innovation District.

Indeed, on the one side the inspiration model of 22@ can be considered as the precursor of this new urban paradigm which fosters local and diversified sectors of high-tech and multimedia production in the city’s core. However, the 22@ has highlighted some difficulties in terms of connectivity and synergy between local players. In fact a certain absence of synergy has been observed among laboratories, university departments and firms. In addition, it is living a critical phase in terms of social participation and social innovation because local conflicts have developed in the last two years, denouncing the absence of public interests in favor of private ones. On the other side, the territorial innovation in the ID@ is considered as an *interactive process* which creates linkages and networking amongst scientific institutions, firms and local organizations. The construction of a territorial development model polarized around knowledge and innovation poles (like urban science parks and innovation clusters) represents a new approach in order to define synergic strategies as well as to foster innovation in the territory (based on the knowledge cognitive process). This interactive approach based on the synergies between scientific/university sectors and creative industry environments could represent a new economic dimension of development based on the innovation cluster and relational proximity approach. Therefore, whether the 22@ appears to support a more functional perspective of *technopolitan* polarization based on a multi-clustered system (top-down strategy), the ID@ appears to be planned by a relational and synergetic perspective (bottom-up and multiple networking strategy). To conclude, we can highlight

that both Barcelona and Montreal with their spatial concentration of firms and technological hubs, groups of research in laboratories and specialized universities represent two innovative urban systems. They could build new dimensions of economic and cultural performances, linking jointly innovation, territorial identities and knowledge economy. However, there are challenges in these processes of reconversion, as we have shown here. Firstly, Barcelona must preserve its historical tradition as a compact city as well as a multi-nodal and hyper-modular Mediterranean hub. Second, Montreal will develop its central techno parks in order to reform deeply its urban neighborhoods and to transform inner dismissed areas into new *cyber-territories* of knowledge, *savoir-faire* and creativity, but this also does not go without challenges in terms of connections with the local community and common agreement on the future of the zone. In any case, it appears that the 22@ can represent an inspiration for the ID case, provided some elements are taken into account in the governance process to be more inclusive of local actors and not replicate the difficulties observed in the Barcelona case.

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